PHOTO SORTIE CHECKLIST

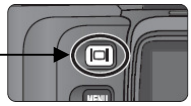
SUCCESS IS IN THE PREPARATION

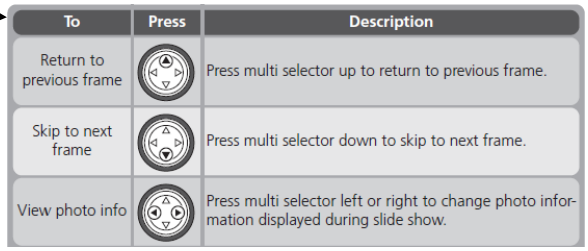
PRE-MISSION INVENTORY

1. NIKON D100, D200 or D90 camera
2. Spare camera & GPS batteries (AA)
3. Battery Charger
4. Camera to PC USB cord (in camera case)
5. Camera Manual
6. PC (FULLY CHARGED)
7. PC 110V electrical power cord
8. KeySpan USB – Serial adapter with DB9 extension cable (satellite cable)
9. Garmin eTrex GPS with fresh batteries (2 AA batteries) and power/DB9 adapter cable
10. 110 volt inverter
11. Checklist

Note: Some camera kits are shipped from NHQ with instructions that specify that camera times should be set to UTC (Zulu) time. Disregard those instructions and follow these instructions instead. As noted below, the camera, GPS, and computer used to process the photos must be set to the same time zone.

PRE-MISSION BRIEFING

1. Clarify Customer Needs – be specific – understand what the customer "wants"
2. Document names and email addresses of persons to whom pictures will be sent
3. Plan the sortie.
4. Coordinate with crew how Scanner will indicate when picture is snapped. Use a word such as "MARK." Make sure Scanner understands that no pictures should be taken until Observer has finished logging the previous picture.
5. Coordinate picture numbers. To check picture numbers:
   - Press the ***MONITOR*** button on the upper left of the camera back 
   - Use the Up/Down function of the Multi Selector Rocker Switch to scroll through the pictures as shown at right.
   - Use the Left/Right function to display two lines of text at the bottom of the screen:
     100ND100/DSC_NNNN.JPG
     YYYY/MM/DD HH:MM:SS



To	Press	Description
Return to previous frame		Press multi selector up to return to previous frame.
Skip to next frame		Press multi selector down to skip to next frame.
View photo info		Press multi selector left or right to change photo information displayed during slide show.

100ND100 – The folder on the camera card in which the pictures are stored
DSC_NNNN.JPG – The filename of the picture being viewed.
YYYY/MM/DD HH:MM:SS – The year, month, day, hour, minute, and second value of the camera's clock when the picture was taken.

The filename of the last picture taken will should be obvious by examining the value of NNNN and the date and time of the picture. The value of NNNN will be incremented by one for the next picture.

Make sure the time setting of the camera is the same as the time setting of the GPS, including time zone, date, and time down to the second. The GPS time zone can be changed. Normally it should be set to the Eastern Time zone. The time setting cannot be changed. The camera time and zone must be set to agree with the GPS.

PRE-MISSION SET-UP and OPS CHECK

Perform the following at mission base on ground before flight.

(The following assumes a Garmin eTrex GPS and a Nikon D100 camera)

Determine the GPS time as follows:

1. Press the ***QUIT/PAGE*** key until the Menu page appears. The GPS time will appear at the bottom of the screen.
2. If the GPS time is different than the local time, Press the ***Down*** key until ***Setup*** is highlighted
3. Press the ***Enter*** key to enter the Setup menu.
4. If ***Time*** is not highlighted, use the ***Up/Down*** keys to highlight it and press the ***Enter*** to select it.
5. Verify the following settings:
   - ***TIME FORMAT*** – 24 HOUR
   - ***TIME ZONE*** – US-Eastern
   - ***UTC OFFSET*** – -05:00 (should be entered automatically when time zone is selected)
   - ***DAYLIGHT SAVING*** – AUTO

To change a setting:

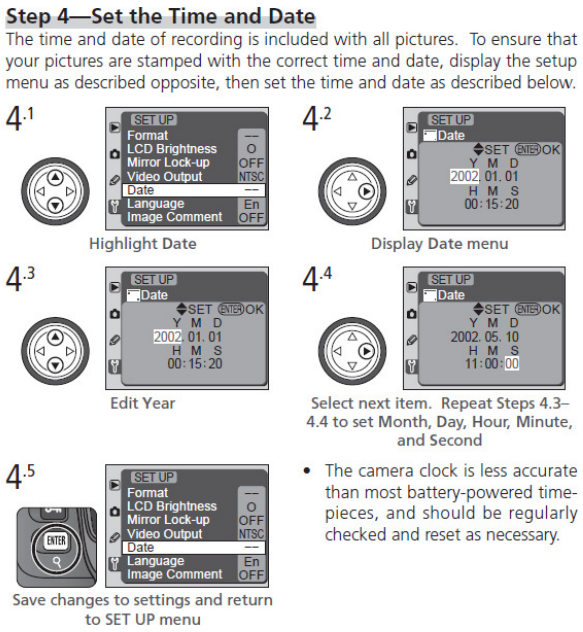
- Highlight the setting using the ***Up/Down*** keys
- Press the ***Enter/Mark*** key to select it
- Use the ***Up/Down*** keys to select a new setting
- Press the ***Enter/Mark*** key to activate the new setting

To change the camera time, press the ***Menu*** button on the camera back and follow the instructions at right.

To synchronize the seconds value of the camera with the GPS:

- Set the camera date, hours, and minutes equal to the GPS date, hours, and minutes. **Check the camera date closely. It is easy to set the year incorrectly.**
- Set the camera seconds about 5 seconds greater than the GPS seconds
- When the GPS seconds count up to a value equal to the camera seconds, press ***ENTER*** on the camera back to start the camera clock.

After this is done, take a picture of the time on the GPS setup screen.



Equipment Ground Check

Note: If pictures will not be emailed using GlobalStar, skip Steps 1 through 4, 6 a & b, and 8.

1. Outlook Express
   a. Add customer email addresses to address book
   b. Set up email groups – we use AA1 as customer group in Ky. Use of groups is easier in flight.
2. Establish internet connection and setup the mission in the SDIS spooler (LAN or dial up)
   a. Right click green satellite icon in tray and select SHOW
   b. Refresh WMIRS
   c. Select the correct mission number
   d. Click SETUP MISSION button.
3. Create a new Text Document on the desktop
   a. In this document put usable text that would likely be used on picture subject line. Skip a line between each likely description.
   b. E.g.: CPF1528 Shoals IN Flood Nxx. Wxx.
   c. Keyboard shortcuts HOME , SHIFT+end (highlight), CTRL+C (copy), CTRL+V (paste)
4. Ensure camera disk is empty - perform disk format if not.
   a. MENU - Left< - select Setup - right> - format disk , ENTER (this will erase all images)
   b. Ensure you have good batteries and extras.
   c. Ensure setup of camera is correct. Selection should be set mode [P}.

5. Check camera settings:

   a. Power Switch – ON – Left thumbwheel at “A”
   b. Left thumbwheel set at ISO – ensure window value set at 800. Otherwise turn right thumbwheel to show 800 in LCD window.
   c. Left thumbwheel set at “WB” ensure window value set at “A”. Otherwise turn right thumbwheel until “A” reads in LCD window.
   d. Left thumbwheel set at “QUAL” ensure “FINE" shows in LCD window otherwise turn right thumbwheel until “FINE” reads in window.
   e. Return camera left thumbwheel to “A”.
   f. REMINDER – most pictures should be taken looking through viewfinder – this will frame picture better as you are seeing what will be on the picture. It also saves battery life.

   Pack units up and head to aircraft – the unit is ready and you are prepared – set up in aircraft and take a picture from aircraft while on ground ensure transmission appears to be operating correctly.

6. Scanner should set up in the rear seat on pilot side.
   a. PC in seat to your right.
   b. Satellite cable connected to PC USB port and to DB-9 connector in right rear armrest.
   c. Camera ready and accessible.
   d. eTrex GPS positioned so it has a clear view of the sky (check this frequently)
   e. REMEMBER PC and GPS are battery-powered. Save your batteries – do not power up until needed. However, make sure to power up GPS in time to allow it to acquire satellites and begin recording ground track before taking the first photo.

7. Ensure all baggage will not interfere with cables

8. Perform an end-to-end test with all equipment when A/C is powered up
   a. Take a picture
   b. Download Picture
   c. Crop picture

d. Send test e-mail

Verify next picture number frequently to insure pictures are logged correctly. To see picture number, press ***MONITOR*** and look at viewfinder – picture number is in lower right portion of view screen. Format DSC_xxxx.jpg

AERIAL PICTURE TAKING

NOTE: THE Mission Pilot's ONLY FUNCTION IS TO SAFELY FLY THE AIRCRAFT, AND TO SAFELY PUT THE AIRCRAFT IN THE POSITION REQUIRED FOR GOOD PICTURES. AT NO TIME IS THE SAFETY OF THE FLIGHT TO BE COMPROMISED.

1. Camera Strap – around scanner's neck
2. Lens cap – Removed (place in Bag or pocket)
3. Mode Selector – A (left thumb)
4. Power Switch – ON
5. Viewfinder Display - OFF
6. Verify user set mode "A" left thumbwheel
7. SAVE BATTERY – look through eye viewfinder to take and frame pictures properly.
8. Verify that no aircraft parts, window edges, fingers, etc. are visible in the pictures.
9. Take pictures as required
10. TAKE PLENTYOF PICTURES

QUICK REVIEW (IF DESIRED)

1. Press ***MONITOR*** button
2. Scroll through pictures using MULTI-SELECTOR (right thumb)
3. Press shutter HALF WAY to return to picture mode

Remember to log picture location as briefed. Compare camera picture number and Observer picture log frequently.

POST-MISSION PICTURE PROCESSING

1. Camera off
2. PC up and running. Set PC to same time zone as camera and GPS.
3. Attach USB cable to camera and to PC USB port
4. Turn camera on
5. PC will recognize camera
6. Nikon View will start automatically (squiggle arrow). Close it.
7. If not already present, create a folder named with the mission number. Within that folder, create a sortie named with the sortie number. Within the sortie folder, create three folders, one named ***Pictures In***, the second named ***Pictures Out,*** and the third named ***GPS Track*** (see the note in Step 11 of the ***Picture Processing*** section concerning the creation of multiple ***Pictures Out*** folders for customers with different processing requirements).
8. Use Windows Explorer to copy pictures from camera to ***Pictures In*** folder.
9. Turn camera off
10. Disconnect USB cable.
11. Turn on GPS
12. Attach GPS serial/power cable to the GPS ***External Power and Data Connector***
13. Press the POWER to turn on the GPS
14. Press the ***Quit/Page*** key until the ***SETUP*** is shown
15. Press the ***Up*** or ***Down*** keys until ***INTERFACE*** is highlighted, then press the ***Enter/Mark*** key.

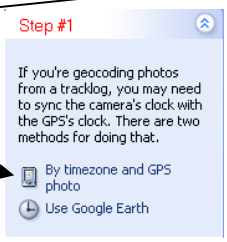
16. If ***GARMIN*** is not shown in the ***I/O FORMAT*** window, press the ***Enter/Mark*** key and use the ***Up*** or ***Down*** keys to highlight ***GARMIN***. Press the ***Enter/Mark*** to select it.

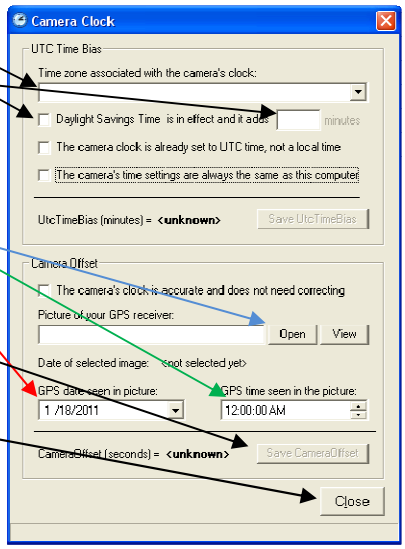
RoboGeo Software Setup & Use

Before starting RoboGeo, create two folders on the desktop, one called ***Pictures Out***, the other called ***Pictures In***. Create subfolders in each of these folders using the Mission Number and Sortie Number for each photo mission flown. This will allow easy retrieval of the pictures for a particular sortie and will avoid mixing pictures from multiple sorties.

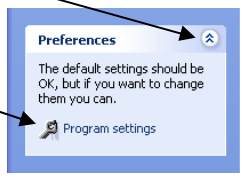
Start RoboGeo using the ***RoboGeo CAP Defaults*** shortcut in the ***All Programs/RoboGeo*** folder of Start Menu

1. To allow RoboGeo to automatically calculate the time offset between the GPS time and the camera time, Click ***Step 1***. The Step 1 window will appear. Click ***By time zone and GPS photo***. The Camera Clock window will appear.
    a. Enter the camera clock's time zone here.
    b. If Daylight Savings Time is in effect, check this box and enter the number of minutes added by Daylight Savings Time (usually 60) in this box.
    c. Click the ***Open*** button and browse for the picture you took that shows the GPS time and date.
    d. Enter the GPS date shown in the picture in this box
    e. Enter the GPS time shown in the picture in this box.
    f. Click the ***Save CameraOffset*** button and the camera offset value in seconds will automatically be entered in the CameraOffset value under the Common Settings.
    g. Click the ***Close*** button to close the window.
    h. ***Note***: Camera offset corrections are applied to the times in the GPS tracklog to make them agree with the camera times. The EXIF times in the picture files are not affected and will be the times stamped on the pictures. See **Correcting Picture Times** at the end of this document for instructions on correcting picture times.





2. Before processing any pictures, expand the ***Preferences*** menu by clicking the double arrows next to ***Preferences***. In the expanded ***Preferences*** window, click ***Program Settings***.



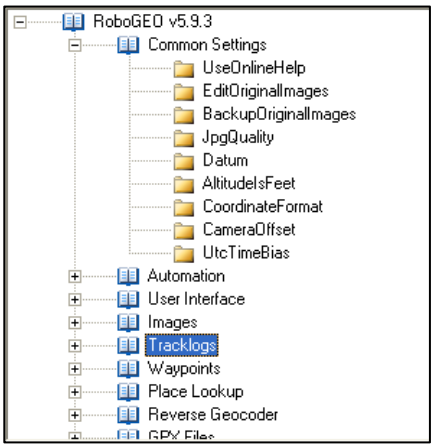
3. The ***Preferences*** window shown on the next page will appear.
4. Click the "+" next to the sub-menu items listed below to expand the sub-menus. Verify that the settings for each item are as specified. It should not be necessary to change the settings not specified.

Note: When changing items that are numeric values, make sure to click the ***Save*** button to the right of the box containing the value. Otherwise, the change will not be implemented. If changing True/False values, the changes are automatically saved.

Common Settings Sub-menu

Camera Offset

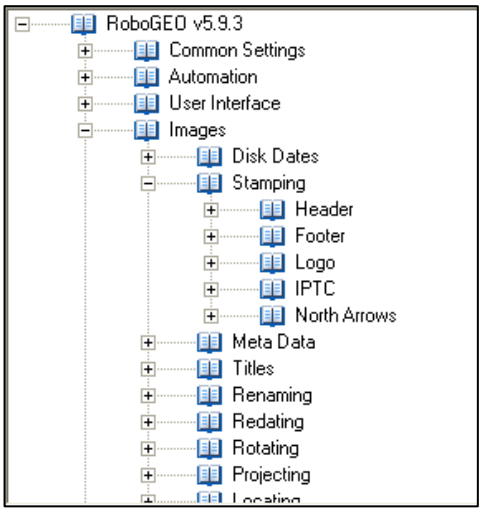
If the camera and GPS were synchronized correctly, this should be zero. If they were not, set this to the number of seconds the camera time is different from the GPS time. Negative values mean the camera clock is ahead (earlier) than the GPS. If you used the automatic time offset calculation method described above, the result of that calculation is entered here and should not be changed.



Verify UtcTimeBias = -1

Images Sub-menu

Stamping Sub-menu



Footer Sub-menu

Verify StampLatLonFormat = DM

Verify StampFontSize = 0

Verify StampFontBold = True

Verify StampOmitDate = False

Verify StampOmitUTCOffset = True

Verify StampOmitTime = False

Verify StampOmitDatum = True

Verify StampUseDateAndTot = True

Logo Sub-menu

Verify StampLogo = False

IPTC Sub-menu

Verify StampIptcEditorPrompt = True

Verify StampIptcLocation = True

Verify StampIptcLocationIncludeCountry = False

Verify StampIptcLocationIncludeCity = True

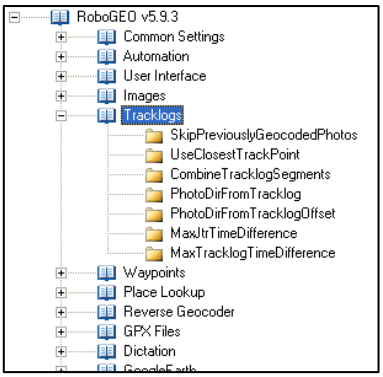
Verify StampIptcSubLocation = True

North Arrows Sub-menu

Verify StampNorthArrowPrompt = True

Verify StampNorthArrowSizePercent = 8

Verify StampNorthArrowLeft = 0



Tracklogs Sub-menu

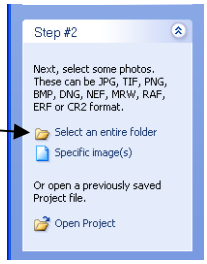
Verify PhotoDirFromTracklog = True

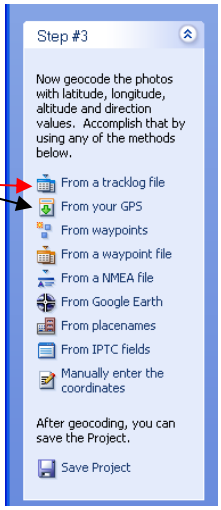
Verify PhotoDirFromTracklogOffset = 270 (photos taken left window)
= 90 (photos taken right window)

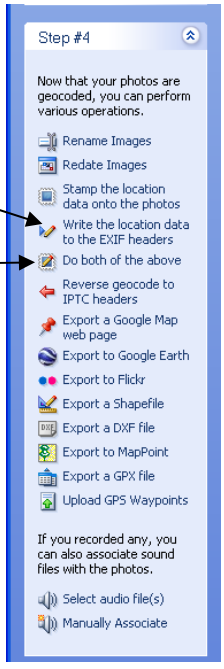
After all preference settings are verified, click the ***Close*** button in the Preferences window.

Picture Processing

1. If the ***Step 2*** menu is not visible on the left side of the RoboGeo window, click the double arrows to expand the menu.
2. Click the ***Select an entire folder*** option.
3. In the window that pops up, browse for the ***Pictures In*** folder in the desktop folder. Then click ***OK***.
4. Monitor the progress of the picture downloading on the status bar at the bottom of the RoboGeo window.
5. Connect the GPS to the computer using the USB to DB9 serial adaptor and the GPS adapter/power cable. Make sure the grove in the data/power connector is aligned with the key on the GPS connector.
6. If the ***Step 3*** menu is not visible on the left side of the RoboGeo window, click the double arrows to expand the menu.
7. Click the ***From your GPS*** menu choice to commence downloading the tracklog information from the GPS.
8. RoboGeo often has difficulty finding the GPS if a USB to serial adapter is used. If this happens, use G7 to Win to download the GPS track to a GPS track file (see instructions later in this document). Then return here and click ***From a tracklog file***. Browse for the tracklog file you saved as part of the G7 to Win process.
9. As a part of the tracklog download process, the pictures are matched with GPS position data using the GPS tracklog times and the time stamps of the pictures. Those pictures successfully matched will show latitude, longitude, altitude (of the aircraft when the picture was taken), and direction. Those not matched will be colored red.
10. If the ***Step 4*** menu is not visible on the left side of the RoboGeo window, click the double arrows to expand the menu.
11. The requirements specified by the customer for the photo mission will determine the options selected on this menu.
    - If the customer specifies that the pictures should be geo-tagged only (the standard requirement of FEMA), click ***Write the location data to the EXIF headers***
    - If the customer specifies that the pictures should be geo-tagged and annotated (the standard requirements of the Kentucky Department of Emergency Management), click ***Do both of the above*** to geo-tag the photograph's EXIF header and stamp location data on the photographs.
    - Note: If pictures will be delivered to different customers with different requirements, separate ***Pictures Out*** folders should be created for each customer. The pictures should be processed separately for each customer, and placed in the appropriate ***Pictures Out*** folder.

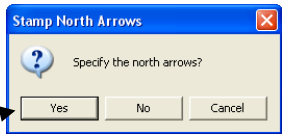




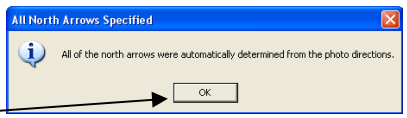


12. Browse for the folder in which the stamped photos will be stored. This should be a subfolder of the ***Pictures Out*** folder named with the Mission Number and Sortie Number of the photo mission.
13. Browse for the appropriate folder and click ***OK***. The progress of storing the pictures will be shown on the status bar at the bottom of the RoboGeo window.

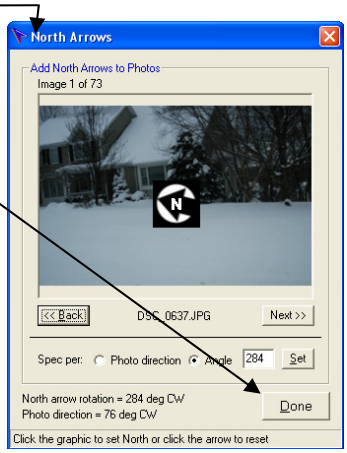
Note: Steps 14-21 are used only if the ***Do both the above*** option was selected in Step 11.



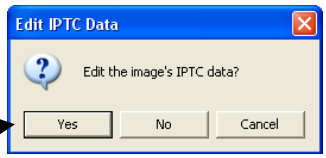
14. When the picture storage is complete, a window titled ***Specify the North Arrows*** will appear. Select ***Yes***.
15. A window titled ***All North Arrows Specified*** will appear because the automatic placement of North arrows was chosen in the Program Settings. (If this window does not appear, cease processing until the cause is determined). Click ***OK*** to close this window.



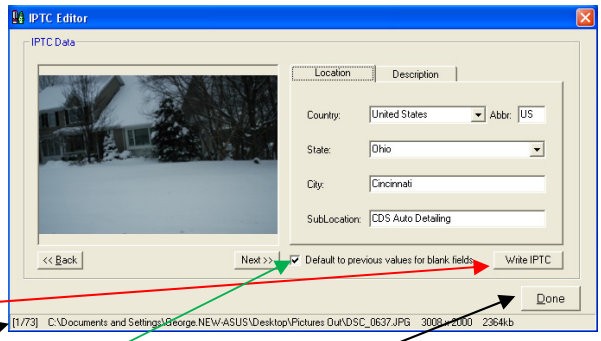
16. A window named ***North Arrows*** is under the ***All North Arrows Specfied*** window. Since the direction of the North arrows was determined automatically, no changes should be made to any of the North arrows on any of the photos. Click ***Done*** to close the ***North Arrows*** window.



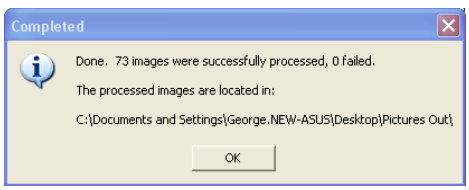
17. The ***Edit IPTC Data*** window appears. IPTC data is the location data line that appears on the photo above the latitude, longitude, and time data line. Click ***YES*** to edit the IPTC data.



18. Enter data for each photo in the ***IPTC Editor*** window.
    - Country : Leave blank
    - Abbr: Leave blank
    - State: Select state where photo was taken in dropdown window
    - City: Enter city in or near where photo was taken
    - SubLocation: Enter street address or other information from aircrew photo log so the location and subject of the photo is clearly described.
    - Click ***Write IPTC*** to write the location data to each photo. RoboGeo will display the next picture. Checking the ***Default to previous values for blank fields*** box carries the values for each data item to the next photo.



19. Monitor the photo number in the bottom left corner of the ***IPTC Editor*** window to insure correct IPTC location data is entered for all photos.
20. When IPTC data entry is complete, click the ***Done*** button.
21. The status of the photo labeling will be shown on the status bar in the bottom left corner of the RoboGeo window. When labeling is complete, the ***Completed*** window shown at right will appear. The completed window should show that the proper number of photos were processed and 0 failed. If processing for some of the photos fails, correct the cause and reprocess the photos.



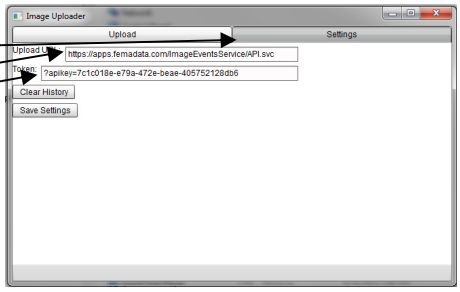
22. Click ***File, Projects, Save*** on the RoboGeo menu bar to save the project in the location and with the name specified by the Planning Staff or the Incident Commander.
23. Close RoboGeo.
24. Turn off the GPS, camera, and laptop and return them to their carrying cases. Store the equipment in a safe location as directed.

Delivering Completed Photos

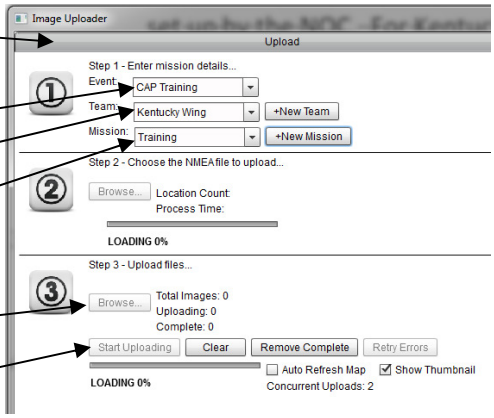
The mission tasking should specify the method of delivering photos to the customer. Sometimes pictures are copied to a CD or DVD and hand-delivered to the customer. Otherwise, the pictures should be uploaded to WMIRS or to the FEMA Image Uploader as specified in the photo mission request.

To upload pictures to the FEMA web site:

1. If the FEMA Image Uploader is not installed, install it as follows:
    a. Obtain the ZIP file containing the ***IEUploader.air*** installation package from the Photo Processing page in the Operations portal of the Wing web site. Extract it to a known location.
    b. Download and install Adobe Air from http://get.adobe.com/air/
    c. Run the ***IEUploader.air*** file to install the image uploader. The uploader program will be installed and a link named ***Image Processor*** will be installed on the Desktop.
2. Set up the FEMA uploader as follows:
    a. Open the Image Uploader program
    b. Click the ***Settings*** tab.
    c. Enter the ***Upload URL*** and ***Token*** in the boxes. These values are set up by the NOC. For Kentucky Wing training, the URL is https://apps.femadata.com/ImageEventsService/API.svc. The token is 7c1c018e-e79a-472e-beae-405752128db6. The characters ***?apikey=*** will automatically appear in the token box.



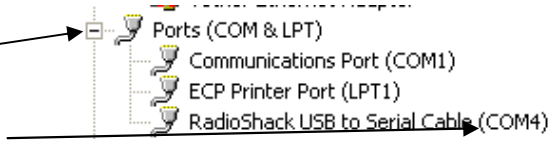
    d. Click ***Save Settings*** and close the image uploader. Then reopen it to implement the new settings.
3. If the ***Upload*** window is not visible, click the ***Upload*** tab. (You may have to drag the boarders to enlarge the window so the ***Project*** box is visible.
4. Select the ***Event*** specified by the NOC for the mission in the ***Event*** dropdown box.
5. Enter the Mission Number in the ***Team*** text box.
6. Enter the Sortie Number in the ***Mission*** box.
7. Skip Step 2 as no GPS track is needed for geotagged pictures.
8. Click the ***Browse*** button and browse for the folder containing the pictures for the specified mission and sortie. Make sure that the specified folder contains only pictures for the specified mission and sortie, because every picture in the folder will be uploaded.
9. Click the ***Start Uploading*** button to begin the upload. The window will expand to show a progress bar for each picture in the folder. The progress bar will show when each picture is uploaded successfully. If some of the pictures do not upload successfully, click the ***Retry Errors*** button to upload attempt another upload.



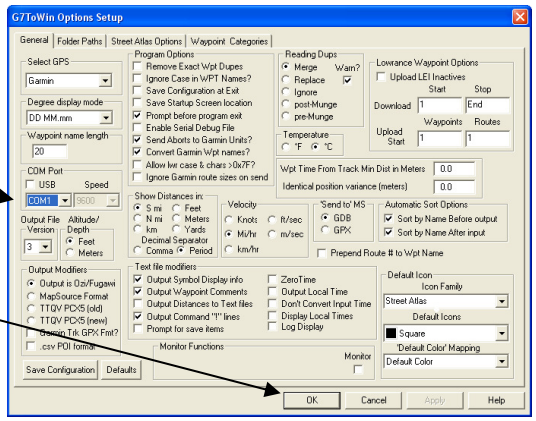
10. If the Uploader window is expanded sufficiently, a map with the pictures will be visible.
11. Close the FEMA uploader when the upload is complete.

Use of G7 to Win to Download GPS Tracklogs

1. Download the G7 to Win ZIP file from http://www.gpsinformation.org/ronh/g7towin.htm and extract it to a known location. Note that the G7 to Win executable file is the G7 to Win program. It is not an installation package. If a shortcut on the Desktop or Start menu is desired, create one that points to ***G7towin.exe***.
2. Determine Comm Port of Serial Adapter
   a. Open Device Manager (***Control Panel, System, Device Manager*** on the ***Hardware*** tab)
   b. Expand ***Ports (COM & LPT)***
   c. Look for COM Port Number of USB to Serial Cable
   d. Close all Device Manager and Control Panel windows



3. In **G7 to Win**, Click ***File***, then ***Configuration*** to open the configuration menu.
4. Set ***Comm Port*** to Port Number Found in Device Manager
5. Click ***OK***



6. Click ***Tracks***, then ***Download Tracks from GPS***. The entire set of GPS tracks will be downloaded from the GPS. Those tracks that are not used can be deleted by selecting all the points in the track and pressing the ***Delete*** key.
7. Save the track for use by RoboGeo by clicking ***File***, then ***Save As …***. In the ***Save as type:*** window, select ***GPX files (*.gpx)***. Navigate to the GPS Track folder previously created using the ***Save in:*** window. Click ***Save*** to complete the process.

Correcting Picture Times

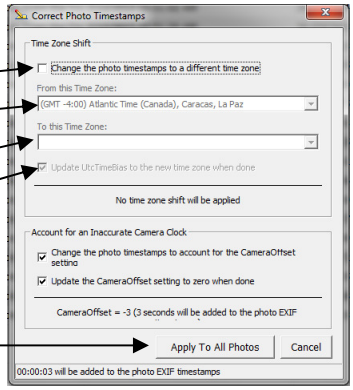
Picture times can be corrected in three ways:

- By specifying a new time zone for the pictures (assumes the camera time zone was set incorrectly)
- By specifying the number of seconds by which all picture time stamps should be adjusted
- By specifying the time for each picture individually

Pictures to be corrected must be loaded into RoboGeo using either of the Step #2 menu choices. Then make the time corrections.

To correct for improper camera time zone:

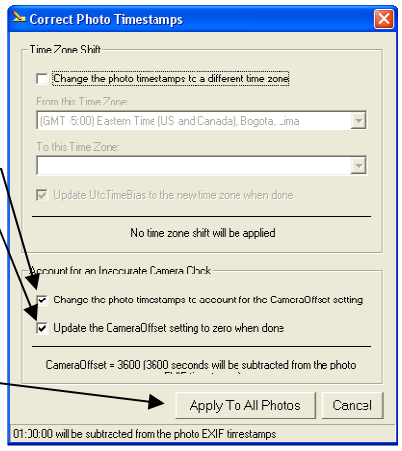
1. Click ***Edit*** on the RoboGeo menu, then click ***Edit Time***, then click ***Per settings…***. The ***Correct Photo Timestamps*** window will open.
2. Check the ***Change the photo timestamps to a different time zone*** check box
3. Select the improper time zone to which the camera was set in the ***From this Time Zone:*** window
4. Select the proper time (the time zone to which the camera should have been set) in the ***To this Time Zone:*** window
5. Check the ***Update UTC TimeBias*** check box
6. Click the ***Apply to All Photos*** button



To apply the same time correction to all pictures:

1. Set the CameraOffset value (located in **CommonSettings** folder in ***Preferences)*** equal to the picture time error in seconds. +60 means the time stamp on the pictures is 1 minute (60 seconds) late. The correction procedure will subtract one minute from the picture time stamps, making them each one minute earlier than their current values.
2. Click ***Edit*** on the RoboGeo menu, then click ***Edit Time***, then click ***Per settings…***. The ***Correct Photo Timestamps*** window will open.
3. Check the upper box in the ***Account for an Inaccurate Camera Clock*** area. If the lower box is checked, ***CameraOffset*** will be reset to zero. If it is not, ***CameraOffset*** will remain unchanged.
4. Click the ***Apply To All Photos*** button.

Note: Either of the above corrections may be applied or both may be applied simultaneously



To correct individual picture times:

1. On the ***Photos*** tab, select the picture whose time you wish to correct.
2. Click ***Edit*** on the RoboGeo menu, then click ***Edit Time***, then click ***Manual***. The ***New Photo Time*** window will open.
3. Follow the directions in the ***New Photo Time*** window.
4. Click ***OK*** to correct the selected picture's timestamp.